

### ABSTRACT OF THE DISCLOSURE

Advanced machine tool coatings for Ti machining are presented. The coatings of the present invention provide for protection from chemical reactivity and higher cutting temperatures. In accordance with one embodiment of the present invention, a coated machine tool is provided including a relatively hard underlayer and a chemically inert overlayer. The relatively hard underlayer is formed over the base material of the machine tool. The overlayer is formed over the underlayer, is chemically inert with respect to titanium, and comprises an oxide of yttrium or another metal oxide. In accordance with another embodiment of the present invention, a coated machine tool is provided including an alkaline earth metal fluoride overlayer that is substantially chemically inert with respect to titanium. The overlayer includes a metal intermixed with the metal fluoride. The intermixed metal is softer than the base material.